

Technology Deployment Initiatives and Partnership Program

Request for Funding FY 2003

FHWA Strategic Goal Area:

Corporate Management Strategies

Project Title:

Digital Training for Foundation Engineering Practices in Cold Regions

Problem Statement:

The cold regions of the United States of America have significant engineering issues relating to heat transfer and response of frozen or unfrozen ground to cyclic freeze/thaw and episodes of quick thaw. The current typical curriculum does not address adequately the knowledge gained through experience. Specialized short courses are difficult to acquire for most professionals. A new approach is needed to successfully share the knowledge of modern professionals in a user-friendly format.

Proposal:

Advance digital training by creating technical content on CD/DVD for professionals to use on demand. The content should include definitions as introduction to arctic and subarctic regions, as well as Permafrost environments. Thermal properties of ice and frozen soil, including temperature, conductivity, resistance, convection, and radiation. The thermal regime should be discussed for one and two dimensional steady state, time dependent problems and solutions. Frost action should be examined as it relates to road and foundation design and construction.

Benefits:

The use of digital format will allow technology transfer using desk-top and lap-top computers as the professional has time to devote to training. Most computers have capability to include animation, video, notes, photographs, and audio commentary. This will make the training more user friendly and readily accessible at available time for each independent professional.

Resources/Cost:

In partnership with academic professionals, and other associations or agencies expert in cold regions engineering, the FHWA could develop content for the curriculum. The digital format can be implemented by the university partner. The university partner estimates faculty service and facility use worth \$16,000. The estimated cost to develop curriculum, produce the CD/DVD, document and report on the product resulting in 5000 copies of the training CD/DVD, is \$59,000, to be funded by TDIP.

Duration:

Completion is anticipated to take 12 months from authorized start beginning in FY 2003.

Organization/Method:

Oregon State University is interested in taking the lead to manage and complete the curriculum with staff experts on this subject. Portland State University is interested in assisting with expertise in creating interactive CD/DVD training tools. The Corps of Engineers Cold Regions Lab can be a resource.

Submitter:

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